

## Remarks

In the present response, two claims (1 and 14) are amended, and six claims (21-26) are newly presented. Claims 1-26 are presented for examination. Applicants believe that no new matter is entered.

### I. Objections to the Specification

The specification is amended to correct a typographical error. Specifically, on page 4, line 28, the word “suspicious” is changed to “suspicion”.

### II. Claim Rejections: 35 USC § 102

Claims 1-5, 8-15, and 18-20 are rejected under 35 USC § 102(a) as being anticipated by Moser “Eternal: Fault Tolerance and Live Upgrades for Distributed Object System” (hereinafter Moser). This rejection is traversed.

A proper rejection of a claim under 35 U.S.C. §102 requires that a single prior art reference disclose each element of the claim. See MPEP § 2131, also, *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983). Since Moser neither teaches nor suggests each element in claims 1-5, 8-15, and 18-20, these claims are allowable over Moser.

### Claim 1

For convenience, claim 1 is reproduced below:

1. A hierarchical method for fault tolerance in a distributed computer system:
  - providing a plurality of data centers;
  - providing a plurality of objects in each of the plurality of data centers;
  - providing a local sub-protocol within each data center;
  - using each local sub-protocol to disseminate messages within its own data center to a plurality of local objects; and
  - activating each of the local sub-protocols from another data center of the plurality of data centers in a single round-trip message in the absence of faults.

Independent claim 1 recites numerous limitations that are not taught or suggested in Moser. For example, claim 1 recites “using each local sub-protocol to disseminate messages within its own data center and activating each of the local sub-protocols...” As claimed, the same local sub-protocol is both activated and used to disseminate messages within its own data center. By contrast, Moser teaches a primary replica to execute the method and then a Recovery Mechanism to transfer the state of the primary replica to the non-primary replicas. Specifically, Moser states:

Figure 3: Passive Replication. The primary replica in the object group executes the method and the Recovery Mechanism transfers the state of the primary to the nonprimary replicas at the end of the method invocation. (Moser: 6.2: Heading on FIG. 3).

As another example, claim 1 recites “activating each of the local sub-protocols ... **in a single round-trip message** in the absence of faults.” The Office Action cites Moser and states: “A single round-trip is inherent in the FTMP protocol cited by Moser.” Applicants respectfully disagree.

Regarding FTMP protocol, Moser simply teaches: “For operation over the Internet, multicast group communication protocols, such as FTMP [15], are currently being developed.” (Moser, section 2, paragraph 5). For several reasons, this statement in Moser does not teach “activating each of the local sub-protocols ... **in a single round-trip message** in the absence of faults.”

First, as recited in the statement itself, at the time of the publication of Moser the FTMP protocols were “currently being developed.” Moser does not teach or suggest what aspects of FTMP protocol being developed would be utilized with the Eternal system of Moser.

Second, Applicants acknowledge that Moser makes a reference to FTMP protocol. A mere reference to FTMP protocol, however, does not teach utilizing a single round-trip message in the absence of faults. In other words, FTMP protocol, by itself, does not inherently teach or inherently suggest a single round-trip message in the absence

of faults. Applicants respectfully ask the Examiner to note a specific section in either Moser reference for such a teaching or suggestion.

Dependent claims 2-13 depend from claim 1 and thus inherit all the limitations of base claim 1. As such, claims 2-13 are also allowable over Moser. Further, these dependent claims contain numerous limitations not taught or suggested in Moser.

#### **Claim 14**

At least for the reasons given above in connection with claim 1, claim 14 is allowable over Moser.

As an additional example, claim 14 recites “activating a plurality of the local sub-protocols **from a single data center.**” By contrast, Moser does not teach or suggest a method with this recitation.

The Office Action cites Moser (section 2, paragraph 3; and section 6.2.1). As noted in section 6.2.1 in connection with Figure 3, the client object group invokes object group A. Then, object group A invokes object group B:

In Figure 3, object groups A and B each contain three passive replicas. A client object invokes a method of object group A, and only the primary replica in object group A executes the method. **That method invocation results in the invocation of a further method on object group B,** and again, only the primary replica in object group B executes the method. (6.2.1, paragraph 2: Emphasis added).

Dependent claims 15-20 depend from claim 14 and thus inherit all the limitations of base claim 15. As such, claims 15-20 are also allowable over Moser. Further, these dependent claims contain numerous limitations not taught or suggested in Moser.

#### **III. Claim Rejections: 35 USC § 103**

Claims 6-7 and 16-17 are rejected under 35 USC § 103 as being unpatentable over Moser in view of Ma (USPN 6,018,805, hereinafter Ma). This rejection is traversed.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or

in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art cited must teach or suggest all the claim limitations. *See* M.P.E.P. § 2143. Applicants assert that the rejection does not satisfy these criteria.

As noted above in Section II, Moser does not teach or suggest each element in independent claims 1 and 14. The addition of Ma fails to cure the deficiencies of Moser. Thus, for at least the reasons articulated in Section II, claims 6-7 and 16-17 are allowable over Moser and Ma.

Further, each of the dependent claims 6-7 and 16-17 recites numerous limitations that are not taught or suggested alone or in the combination of Moser and Ma. The following discussion articulates examples of such limitations; other examples exist as well.

### **Claim 6**

The Office Action states: “However, Moser does not teach waiting a time for the acknowledgement and sending a second propagation message to another of the plurality of objects in the other of the plurality of data centers if the acknowledgement is not received within the time.” Applicants agree. The Office Action attempts to cure this deficiency with Ma (citing Col. 5, lines 32-50). Applicants respectfully disagree.

In reference to FIG. 5, Ma teaches at the cited section:

FIG. 5 illustrates a sequence that transparently re-establishes a connection **with a new server object** using an intelligent proxy. The sequence is transparent to client object 10 because intelligent proxy 20 performs the steps that **locate a new instance of server object 14** and advance the state of new server object 22 to the last state of the crashed server object 14.

Otherwise, locator 30 creates a new instance of server object 14 **on a different server** that has not crashed. (Col. 5, lines 32-50: emphasis added, portions of text omitted).

As taught and suggested in Ma, once a server crashes, the intelligent proxy locates another, different server. By contrast, claim 6 recites sending a second propagation message to another of the plurality of objects in the other of the plurality of data centers. In other words, the second propagation message is sent to another object **in the same data center**.

**Claims 7 and 16-17**

For at least the reasons given in connection with claim 6, claims 7 and 16-17 are also allowable.

**IV. New Claims**

Applicants submit new claims 21-26. These claims recite numerous limitations that are not taught or suggested, alone or in combination, by Moser and Ma.

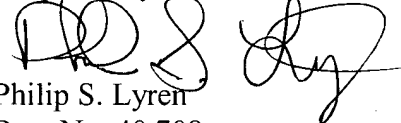
### CONCLUSION

In view of the above, Applicants believe claims 1-26 are in condition for allowance. Allowance of these claims is respectfully requested.

Any inquiry regarding this Amendment and Response should be directed to Philip S. Lyren at Telephone No. (281) 514-8236, Facsimile No. (281) 514-8332. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted



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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 21st day of June, 2004.

By

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